Remarks

Claims 1-9, 13-19, and 28-46, and 56-64 are pe the application. Claims 10-12, 20-27, and 47-55 were withdrawn from conside ased on an election of species requirement. No amendments are made herein matter has been added by virtue of this response. Reconsideration of the applica iew of this response is requested.

Claim Rejections– 35 U.S. (b)

The Examiner rejects claims 1-5, 13, 15, 7, 40, and 56-60 under 35 U.S.C. § 102(b), as being anticipated by Dent. Claim

1. An electronically tuned circuit, comprising a mplifier coupled to an electronically tunable output network, said p olifier capable of being operated in a large-signal mode, said output ncluding an electronically tunable reactive component, wherein electro g of said electronically tunable reactive component includes non-mo ated electronic tuning when said power amplifier is operated in said large node, further wherein a control line extends to said electronically tu ctive component **for electronically varying reactance of said re omponent over more than two values**.

The examiner states "applicant adds to the c ontrol line that extends to the electronically tunable reactive component for electr varying the reactance over more than two values. Clearly the control line of D y capable of supplying more than two values."

Applicant would respectfully ask the Exam nsider that Dent would not work for its intended purpose if the control line to 4 in FIG. 2 or control line 50 to switch 76 in FIG. 3 varied over more than two s e purpose in Dent to provide high efficiency and lossless reactance would be de degraded. Dent provides the embodiment with fixed or variable reactance 42 o g with a switch. As intended by Dent, the switches of FIGS. 2 and 3 provide no an two states for reactances 42 and 74. In one case the switch is closed, providing of reactance 42 or connected to ground. In the other case switch is o ng that side of reactance 42 or 74 disconnected from ground and floating. Dent t ves "maximum efficiency," as described throughout his background and detailed ion. In particular, from column 5 from line 14 to line 61, Dent clearly describes t

In another preferred embodiment of the pr vention, a harmonic

filter network 32 is located between the power
impedance 26 as shown in FIG. 3. The filtering
number of **lossless reactances** 60, 62, 64, 66, 6
form of capacitors and inductors. These reactar
designed to minimize the loss to the desired sig
transmission frequency. In conventional applic
network 32, these reactances are switched to c
frequency of a harmonic filter or an antenna m
in this preferred embodiment according to the
one switched or otherwise variable reactance e
the matching network by a switch 76 or other
controlled by a control line 50. The control lir
manual switch or to a suitable control device
reactance element 74 may have a fixed or var
of a variable reactance is a varactor diode. Ot
may be switched into the network by a manu
such as a PIN diode.

21 and the load
32 includes a
, and 74 in the
sually fixed and
particular
the filtering
operating
network. However,
nvention, at least
74 is introduced into
variance device
be connected to a
natic control. The
ctance. One example
a fixed reactance 74
or electronic switch

The switched or variable reactance element
impedance in order to obtain a different pow
maintain a high efficiency. The magnitude
element 74 as well as the other reactances w
32 are selected so that in a first modulation
open, the load impedance is a resistive load
second modulation mode, **corresponding t**
the overall load impedance is a resistive im
load impedances R.sub.1 and R.sub.2 are se
power supply voltage **to obtain two distinc**
maximum efficiency in both of the constar
the amplitude modulation modes.

to vary the load
level **and still**
vitched reactance
matching networks
hen the switch 76 is
ce R.sub.1. In the
tch 76 being closed,
R.sub.2. The resistive
ith respect to the
output levels at
ude modulation and

Because **switching a resistance/conducta**
absorbs power and reduces efficiency, th
changed by switching a lossless reactanc
the circuit. Consequently, the filter netwo
that a change in susceptance switched acr
change of resistance from R1 to R2 as see

the circuit simply
a impedance **must be**
tance into or out of
st be designed such
P to ground results in a
power amplifier 21.

Thus, Dent is clear that there are only two
for control line 50 of FIG. 3, an off voltage and a
switch is open so no RF signal passes through re
zero RF current flowing zero power dissipated. S
is closed, and if the resistance of switch 44 or 76

f the control line of FIG. 2 or
age. In the off voltage state, the
2 or reactance element 74. With
in the fully on state, the switch
e loss is low. Any intermediate

voltage between these two values would provide for flo current through a more resistive switch, producing more loss and lower efficie ring lossless reactance and high efficiency, Dent expressly teaches against this ity.

Also, any voltage higher than the value needed le "on" or any voltage more negative than the value needed to provide "off" v t unnecessary stress on switching device 44 or 76 without changing the output the switch, on or off. Nothing useful would be accomplished, and lifetime o tch would be degraded. Dent does not teach or suggest providing such excess either, and doing so would detract from his purpose. Thus, applicant would respe sk the Examiner to consider that to achieve the maximum power efficiency and av ducing unnecessary stress, the teachings and suggestions of Dent require two and o values for the voltage to the control line to control switches 44 and 76.

Furthermore, Dent states that "reactance elem ay have a fixed or variable reactance." Although of course a variable reactance e s capable of being varied, and Dent discloses the idea of using a variable reacta n as a varacter, which is a two-terminal device, Dent shows no way of varying e of such a two terminal device in his circuit. Nor does he teach or suggest va reactance element 74 electronically. Nor does he teach or suggest electron rying its reactance over more than two values. Dent does not teach or suggest elec y varying reactance of reactance element 74 or providing a control line to r element 74, either in the text or in FIGS. 2 or 3. Instead Dent provides in FIG. 2 a line switching device 44, and, in FIG. 3, control line 50 to switching element , Dent does not teach or suggest electronically varying reactance of variable e element 74 over any number of values. Although reactance element 74 c ixed device or a variable device, Dent only teaches switching reactance elem or out of the circuit to adjust reactance of circuit 32, and in doing so Dent is var tance of circuit 32 between just two values.

Claims 1, 40, and 56 all include the limit, a line extends to said electronically tunable reactive component **for elec y varying reactance of said reactive component over more than two values**. oes not teach or suggest this limit. Thus, these claims are clearly distinguished teachings and suggestions of Dent, and the rejection under 35 U.S.C. § 102(b), anticipated by Dent has been traversed.

Furthermore, there is no teaching or sugge Dent that the output network is adapted to be tuned to a selected frequency, a fix ncy, or a variable frequency, as described in claims 2 and 57.

Nor is there teaching or suggestion in De vide the output network adapted to be adjusted to maintain a match with a varying pedance, as described in claims

3 and 58. Instead Dent has a fixed load impedance, his
impedance of the filter located between the power amp
impedance seen by the power amplifier, as described in
4, lines 14-15 and lines 53-55.

Nor there is there teaching or suggestion in Der
adapted to modulate the signal, as provided in claim 4
already modulated, as described in Dent in col 4, lines
received by a power amplifier 21 for amplification to
frequency transmission." While of course a filter, as u
characteristics of the wave traveling through the filter
undesirable harmonics or signals interfering at certain
47), the phrase "adapted to modulate" in its ordinary
to the signal or providing a variable input to the signa
adding a second signal. Dent does not teach or sugge
modulate, or add information to the signal. Dent's fi
passing through it in the same way. Therefore Dent'
but does not modulate the signal.

Nor there is there teaching or suggestion in D
providing a signal to control the electronically tunab
claims 28 and 60.

Nor there is there teaching or suggestion in
bias level of the power amplifier in which the bias
necessary to enable operation of the power amplifi

Nor there is there teaching or suggestion in
including at least two reactive components connec
one of the reactive components is adapted to being
as described in claim 60.

Therefore the rejection of claims 1, 40, 47
under 35 U.S.C. § 102(b), as being anticipated by

and he switches the
the antenna to change the
places, including column

vide the output network
st amplifies a signal that is
a modulated, RF carrier is
level suitable for radio
ent, changes the
mple, "to attenuate
cies" (column 4, lines 45-
volves adding information
nay involve, for example
his output network to
ly operates on all signals
network changes the signal

rovide a controller for
t network as described in

provide a bias input for setting
dapted to the minimum level
cribed in claim 38.

provide the output network
tuned circuit, wherein at least
nically tuned by a tuning signal,

and claims dependent thereon,
s been traversed.

Claim Rejections– 35 § 103(a)

The Examiner rejects claims 6-9, 14, 17-2, 38, 41-46, and 61 under 35 U.S.C. § 103(a), as being unpatentable over Dent. Applicant would respectfully ask the Examiner to consider that independent claims 1, and 56, include the limit, "wherein a control line extends to said electronically variable reactive component **for electronically varying reactance of said reactive component over more than two**

values." As discussed above under the 102 rejections D es against this limit by providing a switch that allows only two states. His desc the variable reactor does not teach or suggest adding additional states. Dent's sw heme does not allow for more than the two states Dent provides. Further, a sche more than two states is not obvious from Dent since adding such a requirement would not be enabled by Dent's on-off switching scheme. Further invention wou eded to provide additional states. Thus, the rejection of claims 1, 40, 47, and 56 a s dependent thereon under 35 U.S.C. § 103(a), as being unpatentable over Dent h raversed.

The Examiner rejects claims 30, 33, and 34 un .S.C. § 103(a), as being unpatentable over Dent in view of Hotta. Nether Dent a nor the combination teaches or suggests the limit, "wherein a control line e said electronically tunable reactive component **for electronically varying react aid reactive component over more than two values.**" Thus, the rejection of i nt claim 1 and claims dependent thereon, including claims 30, 33, and 34 h raversed.

Claim 47 was previously amended to be depe claim 1. Therefore, applicant requests that the species be rejoined if clai owable.

The prior art made of record and not relied u n reviewed and is not believed to provide the limit missing from the cited s.

It is believed that the claims are in condition wance. Therefore, applicant respectfully requests favorable reconsideration. If t ny questions please call applicant's attorney at 802 864-1575. Applicant req opportunity to discuss this draft amendment with the Examiner at his earliest nce. Thank you very much for your attention to this matter.

pectfully submitted,

F ab

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